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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Rens Henselmans

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EXAMINER

RICHEY, SCOTT M

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/573,763	Applicant(s) HENSELMANS ET AL.	
	Examiner Scott M. Richey	Art Unit 2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-20 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/29/2006, 6/28/2006</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 3, and 18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make or use the invention.

Claim 1 recites: "said rotatable device further comprising: a second distance measurement device, for measuring in a second direction a second distance between said device and a selected position on a surface of an element mounted relative to said measurement frame." It is unclear how the rotatable device could comprise a distance measurement device as disclosed.

Claims 3 and 18 contain the term "polyedric." The examiner is not familiar with the term, and cannot find its definition. While the applicants may act as their own lexicographer, the specification fails to define the term in a way so as to be understood by one of ordinary skill in the art at the time of invention. See MPEP 2111.01 IV. The claim can be interpreted as the limitation is used in the alternate with *circular*. Further, the examiner believes that the term may have resulted from translation or typographical

error, and the applicants may have intended for the term to read --*polyhedral*--. For the purposes of applying art in the interest of compact prosecution, the examiner construes the term to be synonymous with the term polyhedral.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation: "a measurement frame comprising a mount for mounting the element to be measured." There is insufficient antecedent basis for "the element to be measured." Is this *element* the same as the element to be mounted?

In claim 11, the phrase "or the like" renders the claim indefinite because the claim includes elements not actually disclosed (those encompassed by "or the like"), thereby rendering the scope of the claim unascertainable. See MPEP § 2173.05(d). For the purposes of applying art in the interest of compact prosecution, the examiner construes the limitation to read on functionally equivalent structures.

Claim Rejections - 35 USC § 102

While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of

structure rather than function. Limitations of intended use are not given patentable weight. See MPEP 2111.04 and 2114. Specifically, these occur in:

- Claim 1 – “for mounting the element to be measured,” “for measuring in said first direction a distance between said measurement frame and a predetermined measurement surface provided on said rotatable device,” “for measuring in a second direction a second distance between said device and a selected position on a surface of an element mounted relative to said measurement frame,” and “for measuring an angle of rotation between said first and second direction.”
- Claim 7 – “for measuring in a third direction a third distance between said stage and said measurement frame.”
- Claim 8 – “for mounting an element to be measured.”
- Claim 9 – “for allowing a measurement relative to said measurement frame.”
- Claim 10 – “for providing an interferometric measurement beam,” “for focusing said interferometric beam on a selected position on said surface of said element,” “for receiving said interferometric beam from said selected position and for measuring a distance between said interferometric part and said selected position,” “for automatically moving said focus part to an in-focus position,” and “for measuring a relative position between said focus part and said interferometric part.”
- Claim 13 – “for measuring a relative distance of the interferometer relative to the auto focus.”
- Claim 14 – “for detecting a level of tilt of said element to be measured.”

- Claim 16 – “to position said second distance measurement device orthogonally to a measured contour of said element.”

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 7-9, and 17-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Moriyama (US 4,575,942).

The applicants admit for the record on page two of the specification "U.S. Pat. No. 4,575,942 discloses a stage device with a rotatable device mounted thereon. It is however not used for surface measurement purposes." While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. If the prior art structure is capable of performing the intended use, then it inherently meets the claim. See MPEP 2112.01 and 2114.

As substantially shown in figures 1, 2, and 3, Moriyama discloses a surface measuring apparatus for measuring a position on a surface of an element to be mounted thereon, comprising: a measurement frame (30) comprising a mount for mounting the element to be measured (1, 2, 6, 8-10); a stage comprising a rotatable device (6), the stage being movable in at least a first direction relative to said measurement frame ("X" and "Y"); and a contactless distance measurement device for

measuring in said first direction a distance between said measurement frame and a predetermined measurement surface provided on said rotatable device (17), said rotatable device further comprising: a second distance measurement device (18), for measuring in a second direction a second distance between said device and a selected position on a surface of an element mounted relative to said measurement frame; and a rotation measurement device for measuring an angle of rotation between said first and second direction (21).

As to claim 2, Moriyama discloses the apparatus capable of utilizing a rotation invariant measurement surface. Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability. Furthermore, inclusion of a material or an article worked upon by a structure being claimed does not impart patentability to the claims. See MPEP 2115. Also, the stage (6) has at least four rotations resulting in indistinguishable states.

As to claim 3, Moriyama discloses the apparatus wherein at least said first distance measurement device comprises an interferometer (17, 18, "laser interferometric measurement system") and said measurement surface is formed by a reflective member that has a polyedric or circular shape over at least said measurement surface. The measurement surface is polyhedral (6) (See rejection under §112 above.). However as reasoned above (See rejection of claim 2 under §102 above.), the attributes of the measurement surface are of no significance in determining patentability of the apparatus claim.

As to claims 7-9, Moriyama discloses the apparatus wherein said stage is movable in two orthogonal directions (X and Y) and said stage comprises a third distance measurement device (21) for measuring in a third direction a third distance between said stage and said measurement frame, said third direction being orthogonal to said first direction (18 and 21 are arranged to measure orthogonal directions.); and further comprising a rotatable mount for mounting an element to be measured (5, 6); wherein said mount comprises a reference surface for allowing a measurement relative to said measurement frame (30).

As to claims 17-20, Moriyama discloses a method for measuring a position on a surface of an element, comprising:

(Claim 17) providing a measurement frame (30); providing a stage movable relative to the frame and comprising a device that is rotatable relative to the stage (1, 2, 6, 8-10); providing a predetermined measurement surface on said rotatable device (24, 25); measuring directly in a first direction a first distance between said measurement frame and said predetermined measurement surface provided on said rotatable device (17, 18, 21); measuring in a second direction a second distance between said rotatable device and a selected position on a surface of an element mounted relative to said measurement frame (17, 18, 21); and measuring an angle of rotation between said first and second direction (21);

(Claim 18) wherein at least said first distance measurement device comprises an interferometer (17, 18, 21) and said measurement surface is formed by a reflective

member that has a polyedric (Element 6 is a polyhedron. See rejection under §112 above.) or circular shape over at least said measurement surface

(Claim 19) wherein said second distance measurement interferometer comprises a tilt detector for detecting a level of tilt of said element to be measured (21); and

(Claim 20) wherein said tilt detector is coupled to said stage (21 is optically coupled.), so as to position said second distance measurement device orthogonally to a measured contour of said element (17 and 18 are each measuring in a direction orthogonal to 24 and 25, respectively.).

Claims 5, 6, and 10-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Ohtsuka (US 6,008,901).

Ohtsuka discloses, as shown in figures 8 and 9, a surface measuring apparatus for measuring a position on a surface of an element to be mounted thereon, comprising: a measurement frame comprising a mount for mounting the element to be measured (401, 402, 403, 404); a stage comprising a rotatable device, the stage being movable in at least a first direction relative to said measurement frame (holding 308); and a contactless distance measurement device for measuring in said first direction a distance between said measurement frame and a predetermined measurement surface provided on said rotatable device ("length measuring device"), said rotatable device further comprising: a second distance measurement device, for measuring in a second direction a second distance between said device and a selected position on a surface of an element mounted relative to said measurement frame("length measuring device;"

also the device mounted on 307); and a rotation measurement device for measuring an angle of rotation between said first and second direction (507, 309 and 311); wherein at least said first distance measurement device comprises an interferometer (laser length measuring interferometers) and said measurement surface is formed by a reflective member that has a polyedric or circular shape over at least said measurement surface (405 "ring mirror");

(Claim 5) wherein said focusing member is a cylindrical lens and said reflective member is cylindrical (506a and 506b) or wherein said focusing member is a spherical lens and said reflective member is spherical;

(Claim 6) wherein said measurement frame comprises a reflective mirror (504, 505), and wherein said stage comprises a beam splitting element (702), wherein a beam path of said first distance measurement interferometer travels directly between said reflective mirror, said beam splitting element and said reflective member (The "Z" beam path is between the Z reference mirror and the beam splitter. R1 and R2 paths are similarly configured.), wherein said beam splitting element is coupled a light source (laser measuring device), said beam splitting element further coupled to an interferometric light detector (708);

(Claim 10) wherein said second distance measurement apparatus comprises: an interferometric part (301, 302, 303, 303a, 303b, 304, 308, 310, 701, 702, 703a, 703b, 704, 705, 706, 707, 708, 709, 710, 711, 712, HM) for providing an interferometric measurement beam; a movable focus part (701, 705) for focusing said interferometric beam on a selected position on said surface of said element; an interferometric detector

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(708, 709, 712, 310, 311) for receiving said interferometric beam from said selected position and for measuring a distance between said interferometric part and said selected position; a unit (col.12, ln.5-16) for automatically moving said focus part to an in-focus position; and a focus distance measurement device (col.12, ln.47-53) for measuring a relative position between said focus part and said interferometric part (See also, columns 12 and 13);

(Claim 11) wherein said focus distance measurement device comprises an inductive and/or capacitive distance meter or a glass lineal or the like (The reference discloses a focus distance measurement device. It is believed that this falls within "or the like.");

(Claim 12) wherein said focus distance measurement device is coupled to said interferometric detector (col.12, ln.47-53) in order to provide an absolute zero-level to an interferometric measurement performed by said detector;

(Claim 13) wherein said focus distance measurement device comprises a distance meter (col.12, ln.5-16) for measuring a relative distance of the interferometer relative to the auto focus;

(Claim 14) wherein said second distance measurement interferometer comprises a tilt detector (col.12, ln.30-46) for detecting a level of tilt of said element to be measured;

(Claim 15) wherein said tilt detector is arranged to detect a level of tilt of the element to be measured in a direction orthogonal to said first and second directions (col.12, ln.30-46); and

(Claim 16) wherein said tilt detector is coupled to said stage, so as to position said second distance measurement device orthogonally to a measured contour of said element (col.12, ln.30-46, 54-67; col.13).

Allowable Subject Matter

Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten to overcome the rejection under 35 U.S.C. 112 set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. The following is the examiner's reasoning for indicating allowable subject matter:

As to claim 4, the prior art of record, taken alone or in combination, fails to disclose or render obvious the "housing comprising a focusing member for focusing light from said first distance measurement device on said reflective member, so that a reflective light beam emanates virtually from the central axis of said reflective member," in combination with the rest of the limitations of the claim.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "**Comments on Statement of Reasons for Allowance.**"

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott M. Richey whose telephone number is (571) 270-1296. The examiner can normally be reached on Monday - Thursday, 10:00 - 17:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Toatley can be reached on (571) 272-2059. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Scott M. Richey
Patent Examiner
Art Unit 2877

/Patrick J Connolly/
Primary Examiner, Art Unit 2877